

- 27 -

CLAIMS:

1. An optical panel comprising an optical film for
redirecting light incident upon a rear face of the optical
5 film, the optical film comprising:

a front face; and

a rear face having a plurality of substantially
periodic light-deflecting elements disposed thereon, each
respective element comprising:

10 a transparent first facet for transmitting light
incident thereupon;

an internally reflecting second facet for
effecting internal reflection of the transmitted light
within the element;

15 at least one intermediate facet disposed between
and adjoining the first and second facets at first and
second junctions respectively; and

a further section disposed between the second
facet of the element and a first facet of an adjacent
20 element,

wherein a first and a second full internal angle within the
element at the first junction and the second junction
respectively is at least 90 degrees and no greater than 180
degrees.

25

2. The optical panel of claim 1, wherein, in use, the at
least one intermediate facet is substantially parallel to a
direction of the light incident upon the first facet.

30 3. The optical panel of claim 1, wherein, in use, the at
least one intermediate facet is substantially parallel to a
direction in a range between a direction of the light
incident upon the first facet and a direction of the light

- 28 -

transmitted by a region of the first facet closest to the first junction with the intermediate facet.

4. The optical panel of any preceding claim, wherein the
5 at least one intermediate facet comprises a single facet adjoining the first facet at a first junction and adjoining the second facet at a second junction.

5. The optical panel of any preceding claim, wherein the
10 further section of the element does not have a transmissive or reflective optical function.

6. The optical panel of any preceding claim, wherein the
15 second facet is arranged to effect internal reflection of the transmitted light by total internal reflection.

7. The optical panel of any preceding claim, wherein the first facet is a convexly curved focusing element.

8. The optical panel of any preceding claim, further
20 comprising black stripes disposed on at least one face of the optical panel without substantially blocking a path of the light through the panel.

9. The optical panel of any preceding claim, wherein the
25 optical film is adapted to receive and redirect light incident thereupon at an angle of incidence with respect to the rear face generally of the film of 45 degrees or greater.

30 10. An optical panel for displaying projected light incident upon the optical panel, the optical panel comprising a front face and a rear face, the rear face having a plurality of substantially periodic light-

- 29 -

deflecting elements disposed thereon, each respective element comprising:

a transparent first facet for transmitting light incident thereupon;

5 an internally reflecting second facet for effecting internal reflection of the transmitted light within the element, the second facet being adjoined to the first facet; and

10 a further section disposed between the second facet of the element and a first facet of an adjacent element, wherein at least one of the first and second facets of the element is convexly curved so that a function of the first and second facets acting in concert includes bringing the transmitted and reflected light to a focus at or near to a
15 plane defined by the front face of the panel.

11. The optical panel of claim 10, further comprising black stripes disposed on at least one face of the optical panel without substantially blocking a path of the light through
20 the panel.

12. A rear projection video system, comprising:
the optical panel of any preceding claim; and
a projector arranged to project a video image onto the
25 rear face of the optical panel for providing a viewable image downstream of the front face of the optical panel.

13. An optical film for an optical panel, the optical film having the features of the optical film recited in any of
30 claims 1 to 9.

14. An optical panel substantially as herein described with reference to the accompanying drawings.

- 30 -

15. A rear projection video system substantially as herein described with reference to the accompanying drawings.

16. An optical film for an optical panel substantially as
5 herein described with reference to the accompanying drawings.